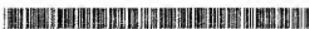


(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
3 March 2005 (03.03.2005)

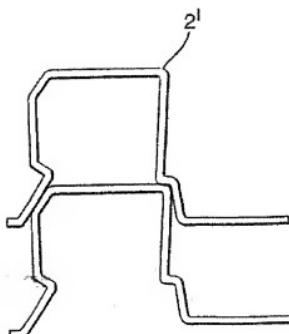
PCT

(10) International Publication Number
WO 2005/019058 A1

- (51) International Patent Classification?: B65D 43/02 (71) Applicant (*for IN only*): HINDUSTAN LEVER LIMITED [IN/IN]; HINDUSTAN LEVER HOUSE, 165/166 Backbay Reclamation, Maharashtra, Mumbai 400 020 (IN).
- (21) International Application Number: PCT/EP2004/008904 (72) Inventors; and
- (22) International Filing Date: 9 August 2004 (09.08.2004) (75) Inventors/Applicants (*for US only*): HÖRNKE, Manfred [DE/NL]; UNILEVER BESTFOODS, Nassaukade 3, NL-3071 JL Rotterdam (NL); KEUNEN, Bernardus, Auton, René, Theodoor [NL/NL]; UNILEVER BESTFOODS, Nassaukade 3, NL-3071 JL Rotterdam (NL).
- (25) Filing Language: English (76) Agent: KLEIBORN, Paul, E.; Unilever Intellectual Property Group, Olivier van Noortdlaan 120, NL-3133 AT Vlaardingen (NL).
- (26) Publication Language: English
- (30) Priority Data:
03077628.0 22 August 2003 (22.08.2003) EP
04077184.2 29 July 2004 (29.07.2004) EP
- (71) Applicant (*for AL, AM, AT, AZ, BA, BE, BF, BG, BJ, BR, BY, CL, CG, CH, CI, CM, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, FR, GA, GE, GN, GQ, GR, GW, HR, HU, ID, IE, IT, JP, KG, KP, KR, KZ, LR, LT, LU, LV, MA, MC, MD, MG, MK, ML, MR, MX, MZ, NA, NE, NI, NL, NO, PH, PL, PT, RO, RU, SE, SI, SK, SN, SZ, TD, TG, TI, TM, TN, TR, UA, UZ, VN, YU only*): UNILEVER N.V. [NL/NL]; Waena 455, NL-3013 AJ Rotterdam (NL).
- (71) Applicant (*for AE, AG, AU, BB, BW, BZ, CA, EG, GB, GD, GH, GM, IL, KE, LC, LK, LS, MN, MW, NZ, OM, PG, SC, SD, SG, SI, TT, TZ, UG, VG, ZA, ZM, ZW, ZY, YE only*): UNILEVER PLC [GB/GB]; UNILEVER HOUSE, Blackfriars, London Greater London EC4P 4BQ (GB).

[Continued on next page]

(54) Title: CONTAINER LID



(57) Abstract: Thermoformed plastic container lid comprising a substantially sheet like lid body having a depending skirt (1) extending around the full periphery of the lid body, the skirt (1) being suitable for engagement with the peripheral portion of a plastic open top container, comprising a lid rim (2) in a position near the periphery of the lid body, which divides the lid body in a centrally located mirror (3) and an outer part (4) on the other side of the lid rim (2), wherein the lid rim (2) comprises one or more bridges (5) connecting the mirror (3) and the outer part (4).

WO 2005/019058 A1

Container lid**Description****5 Field of the invention**

The invention relates to a thermoformed plastic container lid comprising a substantially sheet like lid body having a depending skirt (1) extending around the 10 full periphery of the lid body, the skirt (1) being suitable for engagement with the peripheral portion of a plastic open top container, comprising a lid rim (2) in a position near the periphery of the lid body, which divides the lid body in a centrally located mirror (3) and an outer part (4) on the other side of the lid rim (2). Such a container lid is also known as a two-step container lid (see figure 1), as opposed to a one-step container lid (see figure 2), in which the rim (2') engages with the container rim.

20

Background to the invention

A two-step container lid as described in the preamble of claim 1 is known from DE29910076U1. A two-step container lid may be used in situations where the container is covered with a cover foil, whereas the one-step lid may not. The reason is that the mirror of the two-step lid is at the same level as the top rim of the container and the foil. A one-step container lid cannot be used in combination with a foil at the level of the container rim, since the mirror of the one-step lid will be at a level below the level of the foil.

problem is also solved by the provision of bridges (5). The tendency to nest is herein determined by measuring the pressure needed to compress a stack of lids, and the pressure needed is herein called the stack compression
5 resistance (expressed in N/m²).

Detailed description of the invention

The container and lid according to the invention may be
10 made by the technologies known in the art, from
materials known in the art.

The lid is made by thermoforming. In thermoforming a
plastic sheet softened by heat is formed either into or
15 around a mould. This forming step may be supported by
vacuum, air pressure, and material distribution may be
improved by plug assistance. There are three main groups
of thermoforming: vacuum forming, pressure forming and
matched mould forming.

20 The material of the lid and container may be any
material known for this use. Examples of possible
materials are HDPE (high density polyethylene), LDPE
(Low density polyethylene), PP (polypropylene),
25 PET (Polyester Terephthalate), PVC (Polyvinylchloride),
OPVC (oriented PVC) , PC (Polycarbonate), EVOH
(Ethylenevinylalcohol) and multilayer materials of two
or more of these polymers.

30 The shape of the container lid may be any shape, for
example round, rounded rectangular, oval or square.

The number of bridges may be easily determined by the skilled person taking into consideration the size and shape of the container lid. A large container lid will need more bridges than a small container lid.

5

In another preferred embodiment the container lid comprises an uneven number of bridges (5) evenly distributed around the periphery of the lid. This improves the flexing strength of the lid, compared to 10 the same lid with an even number of bridges distributed evenly around the periphery of the lid. Preferably the width of the bridges (5) is 3 mm or more. The width should be such that the bridge does not break when a pressure commonly used to close the container is 15 applied. The features of the preferred embodiments described above may be applied as such or in combination with each other.

The lid and container may be used for packaging consumer 20 goods, such as for instance foods, such as for instance margarines or spreads.

25

- Description of the drawings
- Figure 1: Cross-section of detail of two stacked one-step container lids
- Figure 2: Cross-section of detail of two stacked two-step container lids
- 30 Figure 3: Top view of container lid according to the invention having eight bridges

Claims

1. Thermoformed plastic container lid comprising a substantially sheet like lid body having a depending skirt (1) extending around the full periphery of the lid body, the skirt (1) being suitable for engagement with the peripheral portion of a plastic open top container, comprising a lid rim (2) in a position near the periphery of the lid body, which divides the lid body in a centrally located mirror (3) and an outer part (4) on the other side of the lid rim (2), characterised in that the lid rim (2) comprises one or more bridges (5) connecting the mirror (3) and the outer part (4).
2. Container lid according to claim 1, wherein the one or more bridges (5) are in the same plane as the mirror (3).
3. Container lid according to claim 1 or 2, wherein the bridge is a partial bridge consisting of two bridge parts (9,10), each being an indentation of a side wall of the lid rim (2).
4. Container lid according to claim 3, wherein the indentation is formed by placing part of the side wall at a negative angle, compared to the side wall at a place where there is no bridge.
5. Container lid according any of claims 1-4, comprising four or more bridges (5).

Fig.1.

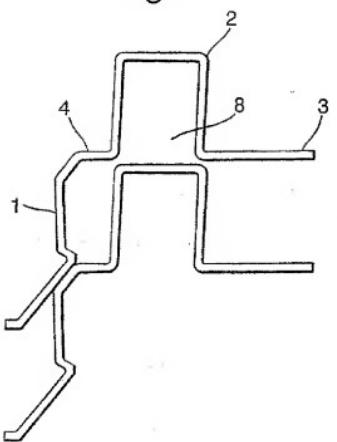
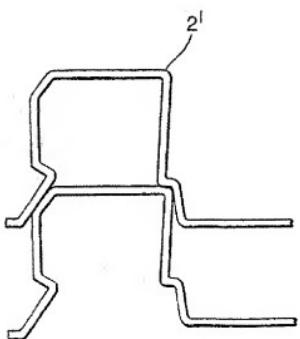


Fig.2.



SUBSTITUTE SHEET (RULE 26)

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/EP2004/008904

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65D43/02

According to International Patent Classification (IPC) or to both national classifications and IPC

B. FIELDS SEARCHED

Written documentation searched (classification system followed by classification symbols)
IPC 7 B65D

Documentation searched other than written documentation to the extent that such documents are included in the fields searched

1.1 Online data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 883 036 A (HAVEN HERM L ET AL) 13 May 1975 (1975-05-13) column 2, line 23 - line 35; figures 1,2 column 3, line 62 - line 64	1,2,5,8
A	US 5 012 928 A (RICHARDSON DALE S ET AL) 7 May 1991 (1991-05-07) column 3, line 64 - column 4, line 30; figures 1,5,6	3,4,6,7, 9
A	WO 02/098759 A (PROCTER & GAMBLE) 12 December 2002 (2002-12-12) page 22, line 5 - line 13; figure 10	-/-

Further documents are listed in the continuation of box C.

Patent family numbers are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *B* earlier document but published on or after the international filing date
- *C* document which may reveal details as priority date(s) or otherwise indicate the publication date of another invention or other special reason (as specified)
- *D* document referring to an oral disclosure, use, exhibition or other means
- *E* document published prior to the international filing date but later than the priority date claimed

F later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

G document of particular relevance; the claimed invention cannot be considered valid or cannot be considered to involve an inventive step when the document is taken alone

H document of particular relevance; the claimed invention cannot be considered valid or cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

I document member of the same patent family

Date of the actual completion of the international search

30 November 2004

Date of mailing of the International search report

09/12/2004

Name and mailing address of the ISA

European Patent Office, P.O. Box 5515 Postfach 2
D-8035 Munich 2, Germany
Tel. (+31-70) 340-2040, Fax. 31 651 400 81,
Fax: (+31-70) 340-3015

Authorized officer

Mans-Kamerbeek, M

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/EP2004/008904

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 3683036	A	13-05-1975	CA	1018103 A1		27-09-1977
US 5012928	A	07-05-1991	JP	4072154 A	06-03-1992	
			JP	2296662 A	07-12-1990	
WO 02098759	A	12-12-2002	BR	0210135 A	08-06-2004	
			CA	2445852 A1	12-12-2002	
			EP	1395501 A1	10-03-2004	
			JP	2004528244 T	16-09-2004	
			WO	02098759 A1	12-12-2002	
			US	2003010787 A1	16-01-2003	
			US	2004137110 A1	15-07-2004	
EP 0598172	A	25-05-1994	DE	4238890 A1	26-05-1994	
			AT	169583 T	15-08-1998	
			DE	59308863 D1	17-09-1998	
			EP	0598172 A1	25-05-1994	
DE 29910076	U	09-09-1999	DE	29910076 U1	09-09-1999	